UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
COOS BAY DISTRICT OFFICE

ENVIRONMENTAL ASSESSMENT
OR128-00-18

Wildlife Habitat Tree and Log Creation

I. PURPOSE OF AND NEED FOR ACTION

Widespread inventories for snags and down logs in the Myrtlewood Resource Area have documented that many areas are below management goals for these structures. The Coos Bay District Resource Management Plan (1995) directs that Matrix lands should be managed so as to provide snags sufficient to support cavity nesting birds at 40% of their population potential and provide down logs at a minimum of 120 linear feet/acre of class 1-2 logs. Watershed Analysis typically recommends that Reserve lands (i.e. LSRs, Riparian Reserves, Administrative Withdrawals, and Congressional Withdrawals) be managed to provide snags for 100% population potential for cavity nesting birds and provide down logs at levels within the range of natural variability of unmanaged stands. Watershed Analyses often identify current deficiencies of snags and down logs and recommend snag and log creation projects to restore these key habitat elements to the landscape. The *South Coast - Northern Klamath Late-Successional Reserve Assessment,* dated May 1998 also prescribes snag and down log management goals for LSRs. Past management practices usually left fewer of these structures than our current land management plan requires and often resulted in the general removal of snags and down logs across the landscape through snag falling contracts, prescribing snag-free zones, and salvaging.

Through this EA, the Myrtlewood Resource Area will evaluate the effects and the effectiveness of methods for restoring wildlife habitat trees and down logs to mid and late-seral stands (generally > 50 years of age) in Reserve areas on BLM-administered lands in the Middle Fork and East Fork of the Coquille River. Actions would be completed in FY2000 - 2010. Restoration efforts could include creation of snags through topping of live trees, creation of hollow (heart rot) trees through inoculating with heart rot fungi, creation of other valuable habitat trees (e.g. broken top live trees, tree cavities) through a variety of other means, and falling of trees to create down logs. This action is in conformance with the *Coos Bay District Record of Decision and Resource Management Plan* (CB RMP), dated May 1995, the *South Coast - Northern Klamath Late-Successional Reserve Assessment* (LSRA), dated May 1998, and the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* and its *Record of Decision* and *Standards and Guidelines* (Interagency, 1994, hereafter referred to as the Northwest Forest Plan [NFP]). The Analysis File contains additional information used by the interdisciplinary team (IDT) to analyze impacts and alternatives and is hereby incorporated by reference.

ISSUES, CONCERNS, AND OPPORTUNITIES

Issue 1: Wildlife Habitat

Snags, Tree Cavities, and Hollow Trees: Numerous sources have elaborated on the value of snags and other habitat trees[1] for wildlife including Watershed Analyses, CB RMP, and the NFP. In particular, habitat trees provide important foraging habitat for many bird and mammal species, provide a substrate for woodpeckers to excavate cavities which in turn are used by many other species, provide hollow tree cavities for nesting and denning, provide sloughing bark used for cover both when the bark is on the tree and after it falls to the ground; eventually the snags fall and become down logs. Current deficits of hard snags unavoidably sets a trajectory for future deficits of soft snags. While we can always create more hard snags to make up for short-term deficits, only time can create soft (decayed) snags. Modeling efforts in Watershed Analysis underscore the importance of maintaining appropriate levels of hard snags in order to provide for future soft snags. The CB RMP in conjunction with Watershed Analyses identify target levels for snags. In areas where inventories and field reconnaissance identify current deficits of habitat trees, restoration efforts to create additional structures are appropriate to bring the landscape towards management goals.

Down Logs: Numerous sources have elaborated on the value of down logs in ecosystems including Watershed Analyses, CB RMP, and the NFP. In particular, down logs provide important foraging habitat for many bird and mammal species, and they provide unique microclimates for many small wildlife species. Current deficits of hard logs unavoidably sets a trajectory for future deficits of soft (decayed) logs. The CB RMP in conjunction with Watershed Analyses identify target levels for logs. In areas where inventories and field reconnaissance identify current deficits of down logs, restoration efforts to create additional structures are appropriate to bring the landscape towards management goals.

Issue 2: Introduction of Heart Rot Fungi

Heart rot fungi inoculations can kill or weaken trees, and could potentially affect adjacent uninfected trees as well. While these fungi are always present in the ecosystem, could the inoculation of trees through management actions increase the probability that other trees in the same stand become infected? Some weak, dying, or dead trees are essential for forests to function as a healthy system; too many, though, is undesirable.

Issue 3: Safety

Standing dead or dying trees can present a hazard to people working or playing in the forest or to property.

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[1]While many documents refer primarily to snags, this EA uses the more general term "habitat trees" to denote snags and other snag-like habitats such as hollow live trees and broken top live trees.

PERMIT OR LICENSE REQUIREMENTS

None required.

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

No Action
Under this alternative, no projects to restore habitat trees and down logs in Reserve areas would occur in late-seral stands, except for some fisheries projects which incidentally provide down log habitat. Snag and down log creation projects would continue to occur on Matrix lands through timber sales. Timber sales (density management thinning) in LSRs and Riparian Reserves would continue to create snag and down log habitat in early and mid-seral stands (generally 30-80 years). Limited amounts of down log and snag habitat would be created in Riparian Reserves through instream (tree lining and cull log placement) and riparian (riparian silviculture) restoration efforts.

Proposed Action - Comprehensive Treatment Methods
Under this alternative, a wide variety of means would be used to create habitat trees and down logs. Methods would include topping trees with explosives, chainsaws, or perhaps other new means; girdling or slabbing trees; inoculating trees with heart rot fungi to initiate heart rot; using a saw to create actual cavities or crevices in trees; and using small fires to burn cavities into the base of individual trees. Habitat trees and down logs would be created in late-seral stands (> 80 years) in Reserve areas in stands where inventories or field reconnaissance suggest short-term deficits occur. Occasional mid-seral stands (generally 50-80 years) may also be treated. The intent is to treat stands where current deficits occur and where natural processes are unlikely to remedy the situation in the short term (30 years). These conditions most often exist in stands approximately 70-120 years of age. Stands would be in the Middle Fork or East Fork of the Coquille River. Habitat trees and down logs would be created in patches within stands. The intent would be to create habitat trees and down logs in sufficient numbers to bring the stand as a whole (averaged across 40 acres) to target levels considering the joint contribution of existing structures, natural creation of habitat trees and down logs, and restoration efforts. Typically, this will mean that restoration efforts create 1-2 snags/acre and fall 1-4 trees/acre.

Actions would occur 1 Oct - 28 Feb to avoid disturbances to nesting spotted owls or marbled murrelets (1 Oct - 31 Dec if activities occur near bald eagle sites), or would incorporate design features to minimize disturbance effects to spotted owls or murrelets. Some actions may occur in Aug and Sep if disturbance to Threatened or Endangered birds is not a concern. Treatments in Riparian Reserves would target trees that do not contribute appreciably towards canopy cover over the stream.

Inoculating trees with heart rot fungi involves collecting local sources of heart rot fungi (*Phellinus pini*), culturing it on wooden dowels, and then placing the infected dowel in a hole bored into a live tree. Trees are inoculated at the appropriate height for target wildlife species use. Multiple dowels (usually 3) are placed up and down the tree to infect a larger area. A small piece of PVC pipe is placed in the hole to prevent the tree from healing itself. If heart rot inoculants are cultured by the U.S. Forest Service, Forest Insects and Disease Service Center, a monitoring

effort is required. The minimum monitoring effort would consist of 100-150 trees monitored 5 times over a period of 10 years.

Tree species, diameter, topping height, and treatment method would be driven by the habitat needs for wildlife. Trees selected for treatment would generally be representative of overstory trees present in the stand. Trees requiring climbing for treatment (e.g. tree topping, inoculation) must be safe for climbing. Trees that pose a danger to climbers include trees that are leaning, have dead tops or large dead limbs, have advanced rot, or loose bark. Some trees would be selected that already show signs of disease or damage. For example, trees with existing heart rot may be topped to create an immediate hollow snag. Other trees would be selected which are healthy trees. Trees would be selected away from roads, trails, and recreation areas. To avoid disturbing residents, blasting would not occur within 2 miles of homes.

Alternative 1 - Tree topping/falling
Under this alternative, only chainsaws would be used to create habitat trees and down logs. Habitat trees would be created only by chainsaw topping or girdling. All other aspects of this alternative are the same as the Proposed Action, except that no monitoring effort for inoculation would be necessary.

Design Features for Action Alternatives

Projects would be implemented in accordance with the appropriate terms and conditions as determined through consultation with the U.S. Fish and Wildlife Service to insure compliance with the Endangered Species Act.

III. AFFECTED ENVIRONMENT

This section describes the environmental components that would be affected by the alternatives. This section does not address the environmental effects of consequences, but rather serves as the baseline for the comparisons in Section IV (Environmental Consequences).

Wildlife Habitat
Inventories for snags and down logs on BLM-administered lands in the Middle Fork and East Fork Coquille 5th field watersheds indicate that levels of snags and down logs are well below target levels established by the CB RMP and Watershed Analysis (Big Creek, Sandy-Remote, and East Fork Coquille). Table 1 summarizes snag and log inventory for the two 5th field watersheds. The minimum target level for hard snags is based on modeling which predicts decay and fall rates for snags based on their size.

Table 1. Snag and log situation for the Middle and East Forks of the Coquille River.

	Target Level[2]	Middle Fork Coquille	East Fork Coquille
Snag density (#/ac), min 20" dbh, 16' high	4	1.75	2.51
Hard snag density (#/ac), min 11" dbh, 10' high	6 (min)	2.24	5.78
Down log (ft^3/ac)[3]	1730 (> 4" dia)	626	584

Heart Rot Fungi

The heart rot fungi, *Phellinus pini*, is one of several heart rots that are common throughout the northwest as well as in the Middle and East Forks of the Coquille River. *Phellinus pini* is considered to be the single most damaging heart rot organism in western North America. Heart rot fungi typically do not kill large numbers of trees in any one location.

Safety/Social

Snags which pose a safety hazard to people and property are naturally present on the landscape. Active timber harvest, salvage, and hazard tree management on BLM and private lands have reduced the number of snags which would pose a hazard to people and property, particularly near roads and recreation sites. Residences are common along major roads in the main creek bottoms.

IV. ENVIRONMENTAL CONSEQUENCES

This section provides the scientific and analytic basis for comparing the no-action and action alternatives described in Section II. The potential short and long term impacts and cumulative effects to each affected resource are discussed here for each project type as it relates to the issues for each alternative. No irreversible or irretrievable commitment of resources have been identified for the action alternatives. The analyses are organized by issue. Effects are direct and indirect unless noted.

[2]Summarized from CB-RMP, Watershed Analyses (Sandy-Remote, Big Creek, and East Fork Coquille), and LSRA. See the original documents for the complete recommendations and a derivation of the numbers.

[3]Comparisons between targets and inventory data are very complex because of the different ways in which data were collected and reported. Additional analyses are necessary for more meaningful comparisons.

Issue 1: Wildlife Habitat

No-Action Alternative

Natural processes such as snow and wind break, disease, and suppression mortality would continue to produce habitat trees and down logs at the natural rate. At the same time, other processes would continue to deplete these structures. For example, snags would continue to fall (great for producing down logs but it subtracts from snag habitat), and snags and logs would decompose; management actions such as harvest, salvage, and hazard tree falling would reduce availability of habitat trees and down logs. Natural creation processes would work to maintain availability of habitat trees and down logs, but the problem now is that past management practices have reduced the availability of these structures on the landscape, so natural processes would work to maintain this low number. As stand age increases, intra-stand competition would result in increased mortality producing more snags from suppression and competition for light and nutrients. Unless new processes begin to create habitat trees and down logs, the landscape would be unlikely to reach management goals for these structures in the short term (30 years) with the current trajectory.

Snag and down log creation projects would continue to occur on Matrix lands through timber sales. Timber sales (density management thinning) in LSRs and Riparian Reserves would continue to create snag and down log habitat in early and mid-seral stands (generally 30-80 years). Limited amounts of down log and snag habitat would be created in mid and late-seral stands in Riparian Reserves through instream (tree lining and cull log placement) and riparian (riparian silviculture) restoration efforts.

Current deficits of hard snags and logs guarantees future deficits of soft snags and logs, since we cannot create soft structures.

Proposed Action

Under the proposed action, many methods would be used to create a variety of wildlife habitat structures. Tree topping would create immediate broken top snags, or broken top trees that become snags in 1-10+ years. Topping with either explosives or chainsaws (or perhaps even other methods) would allow flexibility to accommodate different objectives. For example, topping trees in dense stands can be problematic with chainsaws because falling tops can hang up in adjacent trees, but with explosives, the tree trunk can be completely severed so the top drops straight down with little chance of hanging up. Blasting creates a natural-looking jagged top that may be more susceptible to infection by heart rot fungi than the cleaner top produced by chainsaw topping. Topping trees above several live limbs creates a broken top, live tree that may continue to live for many decades producing a different kind of valuable habitat tree. Individual cavities or other structures could be created for immediate wildlife habitat. Falling of live trees would produce immediate down log habitat. Creation of hard snags and down logs would increase availability of soft snags and logs in the future. Creation of habitat trees and down logs could greatly facilitate meeting management goals for snags and down logs in Reserve areas.

Inoculation with heart rot fungi, either in conjunction with topping or done by itself, is expected to produce a decaying tree suitable for excavation by woodpeckers. Inoculation is expected to hasten development of internal decay while allowing the tree to remain alive (personal communication C. Parks and D. Hildebrand). Topping trees in conjunction with inoculation should produce a snag which develops into a hollow snag. Killing a healthy tree by topping tends to produce a snag that decays from the outside in, never producing a hollow tree (C. Parks and D. Hildebrand, personal communication).

Alternative 1

The effects of this alternative would be similar to the Proposed Action except that fewer methods of creating habitat trees would be available and would reduce options for treatment. Trees with heart rot would be left to develop on their own. Killing a healthy tree by topping tends to produce a snag that decays from the outside in, never producing a hollow tree (C. Parks and D. Hildebrand, personal communication). Some habitat trees created under this alternative would probably develop heart rot on their own, but it may take years, or decades for the disease to establish and even longer for it to progress to the point where it is creating valuable wildlife habitat (i.e. a hollow tree or snag). Selecting trees for topping which already show signs of heart rot would facilitate producing hollow snags in the future. Ultimately, similar habitat structures could be created under either action alternative, but the proposed action would create these structures more quickly and thereby help the BLM meet its management goals in a shorter time.

Issue 2: Introduction of Heart Rot Fungi

No-Action Alternative

The incidence and spread of heart rot fungi would continue at the present rate.

Proposed Action

The species of fungi that produce heart rot, including *Phellinus pini,* are ubiquitous in the Coast Range, even in young stands. Development of heart rot depends on the chance of a viable spore infecting a susceptible wound, after which it slowly decays the interior wood of the tree. Inoculating trees with heart rot fungi is expected to hasten development of heart rot by creating a wound resistant to healing and inoculating the wound with the fungal spore. No exotic species or strains of fungi would be introduced since inoculants would be cultured from local sources. Heart rot fungi spores are naturally so abundant in the air that inoculating trees would not increase the chance of other trees in the same stand becoming infected. *Phellinus pini* only produces internal decay and does not spread from root to root, nor cause butt rot. (Paragraph is from C. Parks and D. Hildebrand, personal communication).

Alternative 1

Same as No-Action Alternative.

Issue 3: Safety

No-Action Alternative

The safety of forest workers, recreationists, and residents would remain unchanged.

Proposed Action

The proposed action would not constitute a significant hazard to humans or property and would not create a hazard that would not naturally exist. While creating snags could increase the likelihood of a person being injured by an otherwise healthy tree, these trees would be located away from roads, trails, and recreation areas, thus minimizing any chance of human injury. Additionally, through intensive timber management and hazard tree removal, the BLM has significantly reduced the number of standing dead trees that would pose a hazard to people and the proposed action would not approach returning to the naturally historic abundance of snags in an area.

Alternative 1

Same as Proposed Action.

Common to All Action Alternatives

Cumulative Effects

Topping, inoculating, or falling a tree is an irreversible action to an individual tree; however, at the stand or landscape level, the cumulative effect of the action alternatives would not exceed that which would occur in an unmanaged stand. The action alternatives are not expected to result in any negative cumulative impacts. The cumulative impact of snag creation efforts on Matrix lands (through timber sales), mid-seral stands in LSRs (through density management timber sales), Riparian Reserves (through wood placement projects in streams), and Reserves (through previous restoration projects) during the period FY97-99 have affected approximately <2% of the Myrtlewood Resource Area. The cumulative effect of additional snag creation proposed in this EA is not expected to increase hazards to people or property since virtually none of the created snags are near roads, trails, recreation areas, buildings, or other areas frequented by people; the cumulative effect of these snag creation efforts would still not approach returning to the naturally historic abundance of snags in an area. To date, it is estimated that 9% of Matrix lands and 1% of Reserve lands have been effected by habitat tree creation efforts during FY97-99 in the Myrtlewood Resource Area. Far less have been effected by down log creation projects. It is hoped that the effects of the Proposed Action together with past and ongoing habitat tree creation efforts would result in cumulative effects that benefit wildlife associated with habitat trees and down logs.

Threatened or Endangered Species

Anadromous Fish - Snag creation was considered programmatically in the 4 June 1999 Biological Opinion for actions affecting Oregon Coast Coho. Since trees for treatment would be selected so as to not appreciably affect canopy cover over streams and no wood would be removed, no impacts to listed anadromous fish are expected.

Marbled Murrelets - The majority of stands selected for treatment would be unsuitable or

marginal habitat for murrelets. When working in suitable murrelet habitat, trees that contain potential nest platforms would not be selected for topping or falling. All activities would take place outside the nesting season for murrelets or would incorporate design features to minimize disturbance effects to murrelets. No effects to murrelets are anticipated.

Spotted Owls - Spotted owls frequently use broken top trees, snags, and tree cavities for nesting. Flying squirrels, a common prey item for spotted owls, frequently use tree cavities for den sites (Carey et. al. 1997). Creation of habitat trees in stands where they are relatively uncommon would probably benefit spotted owls directly, by creating future nest sites, and indirectly, by creating den sites for prey species. All activities would take place outside the nesting season or would incorporate design features to minimize disturbance effects to spotted owls. No disturbance effects to spotted owls are anticipated.

Survey and Manage Species
Individual trees selected for treatment and their general vicinity would be inspected for the possible presence of red tree vole nests. If any possible nests are found, the appropriate management recommendations would be implemented. Other Survey and Manage species are not expected to be affected.

Cultural and Historic Values
Project areas will be reviewed by an archaeologist to insure cultural and historic values are not adversely affected. Specific projects would be field reviewed as necessary if the initial assessment identified concerns.

Other Critical Elements of the Human Environment
Examination has shown the following critical elements of the human environment to be unaffected by any of the alternatives:

1. Air Quality
2. Areas of Critical Environmental Concern
3. Prime or Unique Farmlands
4. Native American Religious Concerns
5. Wild and Scenic Rivers
6. Hazardous Materials & Solid Wastes
7. Wilderness Values
8. Noxious Weeds

V. LIST OF AGENCIES AND INDIVIDUALS CONTACTED

The following people were contacted regarding this project:

Diane Hildebrand - U.S. Forest Service, Forest Insects and Diseases (FID) Regional Office, Portland

Ellen Goheen - U.S. Forest Service, FID Southwestern Oregon Service Center, Central Point, OR

Catherine Parks, U.S. Forest Service, Pacific Northwest Research Station, LaGrande, OR

This EA was prepared by:

Team Lead
John Guetterman, Wildlife Biologist

Core ID Team
Robert Raper, Natural Resource Specialist
Rick Schultz, Silviculturist
Dan Carpenter, Hydrologist
Scott Lightcap, Fishery Biologist
Dale Stewart, Soil Scientist
Darrin McLeod, Engineering

ID Team Support Staff
Holly Witt, Wildlife Biologist
Dan Miller, Recreation
Bruce Rittenhouse, Botanist
Stephen Samuels, Cultural Specialist
Tim Votaw, Hazardous Materials Coordinator
Nick Jansen, Fuels Specialist
Joel Robb, Roads
Jay Flora, GIS Support

Literature Cited

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Parks, C. and D. Hildebrand. U.S. Forest Service, Pacific Northwest Research Station (Parks); and Forest Insects and Diseases Center, Pacific Northwest Region (Hildebrand).